

Secondary Science – Success Criteria for Scientific Inquiry (Initial Draft – Feb 9, 2012)

“Take an inquiry-based approach to learning whenever possible. When students inquire, they read, experiment, research and discuss, constructing knowledge by pursuing what Wiggins and McTighe (2005) call “essential questions” based on the big ideas. **Inquiry learning is particularly useful to differentiated instruction because students automatically use multiple entry points and demonstrate their learning differently when they inquire.**”

-p.39, *DI Educator's Guide*, 2010

“An **inquiry approach**, with emphasis on learning through concrete, hands-on experiences, best enables students to develop the conceptual foundation they need.”

-*The Ontario Curriculum, Science*

p. 29, Gr. 1-8

p. 30, Gr. 9-10

p. 32, Gr. 11-12

3 Overall Learning Goals (for all science courses):

1. We are learning to relate science to technology, society, and the environment
2. We are learning to develop the skills, strategies, and habits of mind required for scientific investigation
3. We are learning to understand the basic concepts of science

Goal #2 emphasizes scientific inquiry. Here's a sample list of some criteria that we may look for with our students:

- coming up with a testable question
- generating an appropriate hypothesis using an if...then statement
- ability to distinguish between different variables (dependent, independent, control)
- selecting appropriate equipment and materials
- using materials and equipment safely by following WHMIS and MSDS
- make appropriate observations – qualitative and quantitative
- make accurate measurements
- organize data in proper format (e.g. table)
- use appropriate symbols and units of measure
- properly analyze and evaluate data (e.g. using a graph)
- evaluate procedure by comparing results to the hypothesis and determine whether it needs to be repeated and/or revised
- write a conclusion that is justified by experimental data
- identify sources of error

Our next steps include:

- refine the list
- generate a rubric & checklist for assessment *for*, *as*, and *of* learning purposes.
- continue to update wiki: <http://dpcdsb-ssc.wikispaces.com/DI+and+PLCycle>